FORAGE MANAGEMENT

By Bill Cox and Phil Atkins

Corn emergence and yield when planting in April two days before a snow storm

2013 recommendations are to plant any time after April 15 to 20, provided your location does not experience late spring killing frosts

Many growers last year planted the week of April 15 when daytime temperatures averaged about 70°F. Farmers reported mixed emergence for corn planted that week, with excellent emergence reported on well-drained fields, and some corn was replanted in poorly drained areas of fields. The first corn silage hybrid trial was planted on April 20th at the Aurora Research Farm in Cayuga County in 78°F weather, but two days before the 5-inch snowstorm.

Weather conditions changed drastically after planting (*Table 1).* The high temperature the day after planting was 51°F and then only two of the next eight days exceeded 50°F. Equally important, only 48 hours after planting, a 5-inch snow storm (1.44 in. of rain) descended upon Aurora. Another 0.20 inches of precipitation occurred the following day, two days after planting, when the high temperature was 36°F. Also, note that low temperatures dipped to 26°F for two nights about a week after planting. Obviously, weather conditions were conducive for chilling damage during the first 48 hours after planting, cold stress during the extended emergence process, and drowning out of corn seeds shortly after planting in poorly-drained areas of a field.

When averaged across 59 hybrids from seven seed companies, stand establishment averaged 84.9% (*Table 2*). Only companies with an equal number of hybrids that were less than and more than 100 days in relative maturity are listed for valid yield comparisons. Modern hybrids planted on well-drained soils can withstand the rigors of cold and wet weather conditions, even five inches of snow, shortly after planting (*Fig.1*).

Some previous reports indicated that even if stand establishment is acceptable, cold weather conditions during emergence can have detrimental effects on

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Table 1. Weather conditions at the Aurora Research Farm from April 15-April 30th in 2012. Emboldened date indicates the weather conditions on the day of planting. Daily weather is recorded the following morning so the April 20th data at Aurora is recorded as April 21st.

CLIMOD product: Daily Data for a Month
Creation Time: 06/13/2012 10:31 EDT
Month: April 2012-Aurora

Day	Max Temp	Min Temp	Precipitation	Snowfall	Snow Depth
15	66	34	0.00	0.0	0
16	69	52	0.06	0.0	0
17	88	47	0.00	0.0	0
18	56	31	0.00	0.0	0
19	55	32	0.00	0.0	0
20	73	45	0.00	0.0	0
21	**78**	**37**	**0.00**	**0.0**	**0**
22	51	35	0.60	0.0	0
23	41	31	0.86	5.0	5
24	36	31	0.20	0.0	1
25	45	35	0.01	0.0	0
26	49	34	0.00	0.0	0
27	64	32	0.19	0.0	0
28	42	26	0.00	0.0	0
29	48	26	0.00	0.0	0
30	53	29	0.00	0.0	0

Table 2. Stand establishment rates and yield of corn hybrids from 7 seed companies planted on April 20, 2012, two days before a 5-inch snow storm.

Seed Company/Brand	Avg. Stand %	Avg.yield tons/ac-65%	Entries
Dekalb	84.0	23.0	14
T.A. Seeds	85.2	23.1	12
Doebler's	84.5	23.7	10
Healthy Herd Genetics	83.8	23.7	7
Pioneer	86.5	23.8	6
Dairyland	87.2	24.0	5
Mycogen	84.2	23.3	5
Avg.	**84.9**	**23.4**	

Fig.1. Counting emerged corn plants at the V4 stage in the Aurora corn silage hybrid trial on May 31, 2012.

FYI

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assumption is that 900 GDD (base41 F) are needed for alfalfa to build up root reserves. A second assumption is that it is safe to cut alfalfa if less than 360 GDD remain before the first killing frost, as there would be insufficient regrowth to use up enough storage carbohydrates to negatively affect alfalfa persistence. Using the 900/360 GDD criteria, we can approximate the odds that fall mowing will not cause winter injury. Approximate probabilities of either accumulating over 900 GDD or accumulating less than 360 GDD, with long-term weather data (30 consecutive years) can be calculated for alfalfa cut on a particular date in the fall. Cutting between Sept. 3 and Sept. 9, the odds of accumulating either >900 GDD or <360 GDD before first frost are approximately zero, so cutting during this period will maximize the chances of winter injury due to fall cutting in Ithaca.

Comparing the Systems

Compare Fig. 2 (interval to first frost) to Fig. 1 (interval between last two cuts). If alfalfa was mowed on July 28, and then mowed again on Sep. 6, the chances of winter injury due to cutting are near zero for Fig. 1 (with 900 GDD accumulated between those dates all 30 years). So under one system (Fig. 2), Sep. 6 would be the worst date to cut alfalfa, while under the other system (*Fig. 1*), Sept. 6 can be a very safe date to cut alfalfa. It is possible that both systems are reasonable. Allowing a 900 GDD interval before a Sept. 6 cut would make a Sept. 6 cut relatively safe. On the other hand, not allowing 900 GDD before a Sept. 6 cut might make this the worst possible time to cut an alfalfa stand.

Conclusions

Our historical understanding of alfalfa root reserves provides evidence for maintaining some type of fall rest period for alfalfa. Applying the 900 GDD criteria to the critical fall rest period, however, results in an average rest period before first killing frost exceeding 7 weeks. Past research data provide evidence that a sufficient rest interval between the last two cuts allows us to take the last cut during the critical rest period. There does not appear to be evidence to change our basic logic for fall harvest of alfalfa. Some fine tuning of the rest interval between the last two cuts can be made using *Fig. 1*. These recommendations are for healthy stands. If a stand is not healthy, a more conservative harvest management may increase the chances of stand survival.

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subsequent corn growth and yield. Of our three corn silage hybrid testing sites, Aurora had the highest average yield. Silage yield (65% moisture) of the 59 hybrids from the seven listed seed companies averaged 23.4 tons/acre (*Table 2*). Residual effects of cold temperature after planting had zero affect on corn growth and yield.

What happens if soil conditions are once again ideal for planting in mid-April of next year? I recommend planting any time after April 15 to 20, provided your location does not experience late spring killing frosts (< 28°F after May 15-20th) and your selected fields are well-drained and do not readily flood. I wouldn't plant much deeper than 1.5 inches in April unless the top 2 inches are dry. Keep in mind, however, that silage yields were probably higher for early-June planted corn compared with late April or May-planted corn in 2011 and 2012 because dry July conditions reduced stature and kernel set in the earlier planted corn. On the other hand, silage harvest of June-planted corn was a month later. So the ideal planting date depends upon weather conditions during the growing season. But do not be afraid to plant on well-drained soils after mid-April if it is cold!

Cover crops on northern New York farms

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harvested triticale planted as late as early October. Labor is allocated as available, and planting is complete within two weeks. McKnight selects fields that are in second, third or fourth year of corn for maximum agronomy benefits. He chooses fields that have fewer stones for efficient harvest, and selects well-drained or tiled fields.

Fisher crops 4,000 acres for 1,900 milking and dry cows. "We experimented close to the farm. This year we're 10 miles away."

Seed bed preparation is critical. Fisher uses a no-till drill on fertile, well-drained soil. McKnight observes that growth is spotty with a no-till drill or disc. He spreads 4,500 gallons of manure after corn is chopped, uses a vertical tillage tool to work the soil and create a fine-till seed bed two inches deep, rolls the seed bed, and then plants with a grain drill, roller combo. McKnight also applies 150 lbs of urea in spring for green up, which he said helps yield and is "for sure justifiable." Rye does not receive urea.